The Excavating Engineer

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Quarry, Sand and Gravel Operation in Wisconsin

Description of the Waukesha Lime & Stone Company's Shovel Operation in Waukesha County, Wis.

WHAT'S in a name? "Nothing!" says Mr. F. C. Wolf, General Superintendent of the Waukesha Lime & Stone Company, whose plant and offices are located near Waukesha, on the Fox River, 22 miles west of Milwaukee, Wisconsin.

The logic of such an answer to that question need only be verified by a glance at the letterhead of the above concern, who have some time ago forsaken the manufacture of lime, and are now producing in addition to stone, as their name indicates, pulverized limestone for asphalt filler, terrazzo stone, poultry grit and sand and gravel, in addition to agricultural stone of which they were the originators in Wisconsin and at present the largest producers in that section of the country, and rip-rap for railroad ballast and for building breakwaters, etc.

However, it is with the actual operation of their sand and gravel pit and their limestone quarry that we are chiefly concerned in this article.

The three plants and main offices as mentioned above are located just a short distance north of Waukesha on the Fox River in Waukesha County, both plants being connected by a spur to the Chicago branch of the Soo Line. A peculiar trick of nature has formed on one side of the Fox River, a high-grade stratum of limestone and on the other side a deposit of sand and gravel. The two plants, therefore, are on opposite sides of the river within easy distance of each other, and both within convenient reach of the main office from which the entire business may be carried on.

Sand and Gravel

For a great many years the Waukesha Lime & Stone Company has accommodated a big demand throughout the southern part of Wisconsin for sand and gravel. The company owns a tract of three hundred acres, and the plant is so centrally located as to keep the haul down to a minimum.

The material is taken out of the pit by means of a Bucyrus 50-B 1¾-yard revolving shovel mounted on caterpillars. This machine, having been purchased only a short time ago, has replaced a Bucyrus 60-C mounted on railroad trucks, a veteran of the business with a long successful record to its credit.

The Bucyrus 20-B ¾-Yard Steam Shovel which is Responsible for the Output of the Limestone Quarry

The 50-B shovel mounted on caterpillars has a distinct advantage over the old railroad-type machine because of its extreme mobility in the pit. When the heaviest rains in recent history deluged this section of the country, during the month of August, cave-ins were so numerous that a machine without this type of mounting would have been buried. During this period it was possible to move the shovel away from the bank at the end of the day, and back again in the morning, with very little loss of time, whereas this same movement of a railroad-type would have meant a heavy loss of time.

The shovel loads into 4-yard Western dump cars, and the output has averaged, since the machine was installed, 500 of these cars a day or an equivalent of 2000 cubic yards on a single 13-hour shift.

Four Views of the Bucyrus 50-B 1¾-yard Shovel Operating in the Gravel Pit of the Waukesha Lime & Stone Company Near Waukesha, Wisconsin

Blasting is necessary at all times to break down the bank in preparation for shovel operation. There are employed four men to do the gopher holing and blasting, together with one foreman in charge.

There are nine Western dump cars in all, used in this pit, which are made up in three trains hauled by three Porter steam locomotives.

The Washing and Screening Plant

The material is loaded directly into a No. 12 Allis Gyratory Crusher. Here the material is broken up into a size which will pass through a 4-inch screen and loaded on to elevating conveyors, which in turn lead to three more crushers of No. 5, No. 6 and No. 7 sizes. One of these is a new Allis-Chalmers high-speed crusher. These crushers all lead directly to another set of steel conveyors which take the material to the screening plant.

There are four washing screens, the No. 1, from which comes the gravel sand for roofing and macadam purposes, being the smallest. The next

The Shovel Crew of the Bucyrus 50-B — Frank Dixon, Operator; John Brillach, Fireman; and John Martella, Assistant

largest size screen is the No. 2 which is designed to produce $\frac{5}{8}$-inch to 1-inch gravel. The No. 3 screen produces 1-inch to $1\frac{1}{2}$-inch gravel, while the No. 4 produces concrete gravel in sizes from $\frac{5}{16}$-inch to $2\frac{1}{8}$-inch.

The various sizes of gravel are dumped into bins which load through hoppers into standard-gauge gondolas on the spur leading to the main line, while the sand is carried by water in chutes to a sand hopper which leads to a bin and from which it is also loaded into standard-gauge cars.

The water for the washing and screening plant is obtained from the Fox River by means of three centrifugal pumps, of No. 4, 6 and 8 sizes. The plant is entirely electrically operated, and every modern appliance is installed to expedite efficient production throughout. The plant is operated on 440 volts supplied by the Wisconsin Gas & Electric Company.

There are 21 men in all employed in the sand and gravel plant, Mr. John Goerke being the foreman in charge. Frank Dixon is operating the 50-B shovel and John Brillach is firing, while John Martella is employed as an assistant.

The Limestone Quarry

The limestone quarry, which is operated across the river from the sand and gravel pit, plays the other very important part in the business of the

The Sand Screen Showing the Chutes Leading to the Sand Bins

company. The material is excavated by means of a Bucyrus 20-B ¾-yard revolving steam shovel mounted on caterpillar traction, and has replaced the old Bucyrus 14-B electric shovel which had for many years given excellent service to the company.

This shovel has excavated on an average of 300 tons of material a day or 225 cubic yards, loading into 4-cubic-yard Western dump cars. All of the material is blasted ahead of the shovel.

A Fordson Locomotive Made by Whitehead & Kohl, Detroit, Hauls the Stone to the Crusher

Two well drills are used, for preparing holes for the blast, one of which is a Keystone, the other a Cyclone.

The trains are hauled to the crusher by means of a Fordson locomotive manufactured by Whitehead & Kohl, a photograph of which is published herewith. This device replaced three teams which

were formerly used, with far greater output and less expense. It burns on the average of about one-third gallon of oil and about eleven gallons of gasoline per day.

The Stone Plant

The material is dumped into an Allis-Chalmers 44 x 60-inch jaw crusher from which it is loaded on to a 42-inch steel pan conveyor to another No. 7½ Allis Gyratory Crusher. After this process

If You Visit the Waukesha Lime & Stone Company's Plant You'll Always See Superintendent F. C. Wolf on the Job

it is dropped into a bin and loaded into standard-gauge cars in sizes from ⅜-inch to 2 inches in the form of macadam and fluxing stone.

The Fertilizer Plant

The ⅜-inch to 2-inch stone which is not required for macadam or fluxing stone goes farther into this granulating process, being conveyed by an all-steel belt, 350 feet long from center to center and 16 inches wide. This belt is said to be one of only two in the United States, and is manufactured in Sweden. This conveyor takes the material into a dryer 60 inches in diameter by 50 feet long. When the material is completely dried, it is then sent through a No. 2 Allis-Chalmers Pulverator, from which it emerges as fertilizer small enough in size to go through a No. 12 mesh screen. Most of this fertilizer finds its market in Wisconsin, while some is shipped to Northern Illinois and Iowa.

A trip through the two plants of the Waukesha Lime & Stone Company immediately gives a feeling of order and industry. All machinery and plant equipment is modern and up to date, and so arranged as to obtain the maximum of returns. A unique feature of the company lies in the fact that it has as its President, a woman, Mrs. E. W. Gillen, who has pioneered the company through the worst days of its history to the success that it now enjoys. Mrs. Gillen holds the interesting distinction of being one of only four women of such position in the industry.

The other officers of the company are E. E. Gillen, Vice-President and H. M. Halverson, Secretary. Mr. F. C. Wolf, Superintendent, has been identified with the company for a great many years. A great portion of the responsibility for the company's success is due to his ingenuity and practical ability.

Limestone Quarrying with a Railroad-Type Shovel on Caterpillars

Description of the Rock Cut Stone Company's Plant Near Syracuse, New York — Caterpillar Mounting Makes Possible from 10% to 15% Increased Shovel Output

SYRACUSE, New York, boasts of one of the most up-to-date crushed stone plants in that section of the country. We have in mind the Rock Cut Stone Company, which operates a two-hundred-acre deposit of high-grade limestone five miles from Syracuse, on the Delaware, Lackawanna & Western Railroad.

The principal product of the Rock Cut Stone Company is crushed stone for railroad ballast, road-building and concrete work, which finds its market throughout the principal cities of New York State.

The company has for excavating and loading the rock a new Bucyrus 78-C railroad-type shovel mounted on caterpillars. This type of mounting, introduced by the Bucyrus Company about two and one-half years ago, has met with unprecedented success not only for work in quarries but in mines and construction work, with an enormous saving of labor in the pit and operating time. In addition to this shovel, they employ two 2-yard shovels with traction wheels.

Caterpillar mounting for railroad-type shovels is unquestionably the most outstanding development ever written into the annals of excavating history. Although we have, in previous issues of *The Excavating Engineer,* lauded the introduction of this type of mounting, and have watched with a great deal of interest its steady growth from an experimental stage to the present time when it is being used in all parts of the United States and foreign countries, we cannot pass unnoticed the invaluable service this type of mounting is doing for the Rock Cut Stone Co.

Purchased in March, 1924, this shovel has been in continuous operation since the date of

its installation. A. G. Seitz, Secretary and General Superintendent of the company, tells us that caterpillar mounting for their railroad-type shovel has made possible the production of from 1800 to 2000 tons per day, an increase of from ten to fifteen per cent in their output, because its extreme mobility has resulted in continuous operation. Furthermore, this output has been possible with a saving of four men around the shovel.

The shovel, which is equipped with a 3-cubic-yard dipper, loads directly into four and five-yard quarry cars, 36 in all being used and hauled to the plant in trains of seven or eight cars to the train by 36-inch gauge Porter locomotives.

Well drills are constantly engaged in drilling 6-inch holes ahead of the shovel, and gelatin 60% and ammonia 40% dynamite is used for blasting.

The loaded material is taken to the primary crusher, a 36-inch gyratory, located so that the dumping operation is on a level with the quarry floor. From here the material flows to an 84-inch x 18-foot scalping screen, the rejection going on to two 14-inch and 12-inch rejection crushers. All stone over ¾-inch is conveyed to two 60-inch x 20-inch screens for sizing. That which is smaller than ¾-inch is conveyed to vibrating screens and put in bins ready for use. There are ten concrete bins with a total capacity of 1000 tons, located directly under the 60-in. x 22-ft. scalping screens.

A spur from the Delaware, Lackawanna & Western Railroad leads directly under the bins, where standard-gauge railroad cars take the product away from the plant to its ultimate market.

The plant is entirely operated by electricity, Niagara Falls power being obtained through the Syracuse Lighting Company, a voltage of 11,000 being transformed to 440 volts for plant use.

The Rock Cut Stone Company have never been averse to the adoption of a new device which would increase the capacity of plant production. During their twenty years of continuous operation they have faithfully served the industry with

Another View of the Shovel

the best grade of crushed stone that has been possible for them to produce, and their integrity and business-like manner of conducting their business is responsible for the success they now enjoy.

W. L. Sporburg is President and General Manager, A. G. Seitz is Secretary and General Superintendent, while J. F. Nash is Treasurer. The shovel crew on the railroad-type shovel consists of Frank Revoir, operator; Andrew Miller, craneman; and Roy Revoir, fireman.

The Rock Cut Stone Company's Bucyrus 78-C Mounted on Caterpillars in Operation in Their Quarry Near Syracuse, New York

Digging 35,000 Tons of Sand a Month with Railroad-Type Shovels

Description of the Ohio and Michigan Sand and Gravel Company's Operations at Chilson, Michigan. Veteran Railroad-Type Shovel of 31 Years' Service Still in Operation

THE Ohio and Michigan Sand and Gravel Company, conducting its business from the offices in the Nichols Building, Toledo, Ohio, are operating at Chilson, Michigan, an up-to-date sand and gravel pit which should be of interest to the sand and gravel operator and the excavating engineer.

Chilson, Michigan, lies on the southern portion of Livingston County, about forty miles from Detroit on the Ann Arbor Railroad. The sand and gravel produced has a high commercial value, and finds a ready market in Northern Ohio with Toledo as a central salespoint, and in lower Michigan with Detroit as the main market in that district. The sand and gravel is of an excellent quality, and is used principally for the construction of roads throughout this district and to some extent for roofing purposes.

Over a tract of two hundred acres this company has in store an estimated amount of 30 million tons of material, and when business is active the monthly output is between 30,000 and 35,000 tons. It may be readily seen that the life of this operation will be a long one.

The Excavation

The length of the working face is about 3000 feet, and the height is variable, running from 20 to 90 feet. The material consists for the most part of about 50% sand, and the rest gravel ranging in size from a few inches to man-size boulders.

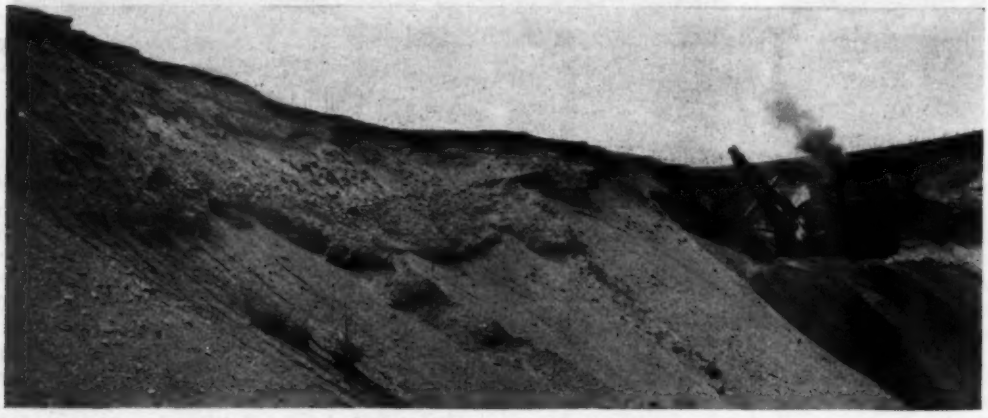
The overburden is very light, and is removed by wheeled scrapers, except at times when it becomes too heavy for this equipment, in which case it is removed by the steam shovel.

The company has in operation two railroad-type shovels, one of which is a Bucyrus No. 1 Crane-Type Shovel, No. 168, mounted on trucks, a veteran of excavation, which was sold to the T. S. S. & N. M. Railway in 1893. Since then it has passed through various hands until July, 1917, when it came into the possession of its present owners. This shovel is equipped with a 1½-yard dipper. Since its early beginnings it has undergone only a few modifications, and has proved itself a constant and serviceable tool to its owner. Today it is doing its daily bit in a most satisfactory style along with the newer shovel, a Bucyrus 70-C, which is equipped with a 2½-yard dipper and is likewise mounted on standard-gauge railroad trucks.

The material is loaded into trains of four to six fifty-ton Roger Ballast dump cars and eight to ten 12-yard Western side dump cars. One 40-ton Shay locomotive made by the Lima Locomotive Company is used to haul the trains to the screen and a 50-ton, six-wheel switching engine is used for relief.

The Washing and Screening Plant

The gravel is delivered by the cars to the screening plant, and is dumped directly into a receiving hopper which feeds onto a 320-foot, 24-inch belt installed by the Robbins Company. The material is first run onto an Allis-Chalmers



31-Year-Old Veteran Loading Gravel

General View of Ohio and Michigan Sand and Gravel Company's Operations at Chilson, Michigan

60-inch screen, and then to a battery of four conical screens of their own design, and made by the Carroll Machinery and Foundry Company, Bucyrus, Ohio.

From this arrangement of screens gravel may be produced in sizes of ¼-inch to 1-inch, ¼-inch to 1½-inch and ¼-inch to 2½-inch.

A spur from the main line of the Ann Arbor Railroad permits standard-gauge cars to be run under the storage bins which have a capacity of six carloads, and from which the material is loaded to the cars by gravity.

In walking about the plant of the Ohio and Michigan Sand and Gravel Company one quickly notices the up-to-date manner in which it is operated. The entire plant is electrically operated, power being obtained from the Detroit-Edison Company. The sand and gravel is of a good quality for commercial purposes and continued success of the company is assured.

W. Frank Bradley is president of the company,

Bucyrus 70-C Loading Gravel

F. A. Dischinger, vice-president, G. Koeppe, secretary and treasurer, and H. C. Ellis is sales manager. Neal Sheekee is superintendent, while operating the two shovels are George Gardener and M. Prosser.

Grading a Subdivision with a ¾-yard Diesel Shovel

Description of Diesel Shovel Operation on W. G. Hoy's 80,000-yard Contract Near Detroit, Michigan

W. G. HOY, Contractor of Redford, Michigan, has under way an 80,000-yard contract with the Detroit Development Company out near Birmingham, a suburb of Detroit, which should attract the attention of all those interested in excavation.

The work consists of the grading and leveling of a high-grade subdivision, which lies out on Woodward Avenue, between Royal Oak and Birmingham. The contract was awarded on June 1st of this year, and in order to expedite the job Mr. Hoy added to his equipment a Bucyrus 20-B ¾-yard shovel operated by a Diesel engine. Mr. Hoy's work is of particular interest at this time because of the fact that the successful application of the internal combustion engine to excavating machinery has attracted the interest of engineers and contractors all over the country.

The application of the Diesel engine to excavating equipment has, without question or doubt, been the most revolutionary development ever made in the history of the internal combustion engine in small shovel design. This type of unit has many advantages over that of the steam machine. In the first place, the simplicity of operation makes it easier to operate. It burns as fuel any type of low-grade fuel of a high-heat value that will flow freely through the pumps, and makes possible cost of operation which is but a fraction of that of the steam machine.

The power for the thrust is transmitted, as may be seen, from the photographs by a rope

W. G. Hoy's Bucyrus 20-B Diesel Shovel Loading Trucks on Subdivision Work Near Detroit

thrust device. This powerful rope thrust device eliminates the undesirable necessity of chains, shafting or other devices which complicate the machinery, and develops a thrusting force more powerful than the thrust of the steam shovel. The dipper is forced into the bank with all the power of the main engine back of it. In addition to this feature the rope thrust device gives the shovel greater simplicity. In heavy sticky material, this arrangement of ropes enables the operator to shake the dipper more vigorously and at a higher lift than is possible even with a steam machine.

Method of Excavation

As mentioned before, Mr. Hoy's contract consists of grading and leveling a subdivision. The shovel loads the material into four trucks which transport the material to various parts of the property for fill over an average haul of 1000 feet. After the material is dumped on the fill it is leveled by a Fordson Tractor grader.

The road work is being done by a Fordson tractor and scraper, the cutting here being light, with an average depth of about four feet. The shovel has been working constantly since it was put into operation on the work, the percentage of idle shovel time being very low. The output has been most satisfactory, for on a ten-hour shift, they have averaged a daily output of 800 cubic yards.

It is expected that work will be completed in the early fall, and Mr. Hoy will have one more successfully completed contract to his credit.

Another View of the Bucyrus 20-B Diesel

The work is progressing nicely under the supervision of John Dunn, Sr., the superintendent of the work. W. G. Hoy is President of the company, while C. S. Heath is Secretary and Treasurer of the company. J. Blake is the operator of the Bucyrus 20-B.

Care of Trucks in Summer

By P. L. Sniffin

There is nothing difficult to understand about the precautions that must be taken to give motor trucks a fair chance in summer. If the operator will make a few adjustments at the beginning of the season and remember a few points of attention that will help to keep the trucks running at their best, he will be fully repaid in the form of more satisfactory service and he will find on comparison, with previous records over summer months, that his running expenses will be much lower. Here are a few hot-weather suggestions worth remembering:

1. Always at the beginning of a season of hot weather it is necessary to change the carburetor adjustment, that for summer being a trifle leaner than that for winter. Overheating is sure to result if the carburetor is improperly adjusted. Great care should be taken that the adjustment when made is correct and then it should be left alone. It is impossible to maintain the proper carburetor adjustment if the driver tinkers with it every time the engine shows the least irregularity of running.

2. Lubricating oil plays an important part in the cooling of the engine, as it cools the bearings. Keep the crank-case clean; it cools the oil. Oil should be changed frequently enough to keep its lubricating qualities high. The average working temperature of oil in summer is higher than in winter and so oil of the same body will be thinner. Therefore, it is advisable to use a grade heavier oil in summer. When a heavier oil is used, care should be taken not to work the engine too hard before it is warmed up.

3. See that your truck's engine is clean, inside and out, all the time. The air which goes into the carburetor draws dust and dirt with it which will not only stop up the carburetor, but if this passes on into the engine, it causes rapid wear to pistons and cylinders, or it may work down into the bearings.

4. In hot weather the cooling system should be drained often and replenished with clean, fresh water. The fan belt and fan should be examined for looseness of the belt, tight bearings or loose fan blades.

5. Timing has an important bearing on cooling. In hot climates where temperatures are high for a considerable part of the year, the engine may be made to run cooler, but at a slight sacrifice of power, by setting the camshaft one tooth ahead (earlier) on the timing gears, so that the exhaust valves open earlier.

6. The exhaust should at all times be kept clear of obstruction, and mud should not be allowed to cake on the outside of the muffler. The importance of this will be realized when it is considered that 40 per cent of the heat of combustion must escape through the exhaust. Therefore, if any part of the exhaust system is impeded, a part of this heat must be carried off by the cooling water, raising the temperature above a safe limit.

7. It is important to see that the ignition system furnishes a spark of sufficient strength. A weak spark, usually due to excessive lubrication of the magneto, dirty breaker or distributor or weak magnets, will have an effect similar to late spark timing and overheating will result.

8. Some truck owners make the mistake of obstructing the front of the radiator with license plates or signs. Good air circulation and clean radiating surfaces are as important as good water circulation. It is a good idea to clean the outside of the radiator well before the hot spell.

What Happens When Dynamite Explodes?

By Charles S. Hurter

Big dynamite blasts are more and more frequent items of news. Charges of dynamite are buried deep in the face of a cliff, an electric switch is turned, there is a deafening roar, and thousands of tons of rock come crashing down. What, the inquiring observer asks, produces this explosion? What actually happens when dynamite explodes?

To answer this question it is necessary to explain briefly what dynamite is. Reduced to its essentials, dynamite is a mixture of nitroglycerin with wood meal and nitrate of soda or nitrate of ammonia, or both. Nitroglycerin, in turn, is composed of several different elements, namely: carbon, hydrogen, nitrogen, and oxygen, the molecules of which are grouped in such a way as to form a heavy, oily, yellow liquid. Now these same molecules are capable of arrangement in other groups to form several different substances instead of the one, and the bonds which hold them together in the particular arrangement which makes nitroglycerin are very weak.

Consequently, when the electric current sets off the detonator imbedded in the dynamite, and this imparts a sharp shock and very high temperature to the nitroglycerin, the bonds between the molecules which compose the nitroglycerin break down. The nitrogen and some of the oxygen remain free, both of them, gases, while the other molecules instantly combine to form two compound gases, carbon dioxide and water vapor. The breaking down of the nitroglycerin and rearrangement of its molecules generates a great deal of heat, enough to raise the temperature of the gases to 6300 degrees F. or thereabouts, and this high temperature causes the other ingredients of the dynamite to decompose into gases, or to burn, with the release of still more heat. All of this takes place in a single instant, and the highly heated and rapidly expanding gases, which would normally occupy a much greater volume than the dynamite, exert a sudden tremendous pressure on the walls of the bore hole. The rock gives way and the escaping gases set the air into violent vibration. To the beholder, the explosion consists of the roaring noise and the rending of the rock, but in reality these are only the audible and visible results of the rearrangement of the molecules of the dynamite when subjected to a shock from the detonator, this conversion of the nitroglycerin and other ingredients of the dynamite into gases constituting the actual explosion.

A FEW RECENT EL

1. The Hoyt Mining Company's Buc
loading iron ore in the Scranton
nesota. This company is a subsi
& Co.

2. J. Robert Bazley starting strip
property of the Cranberry Creek
new Bucyrus 320-B electric shove

3. Loading and stripping operations,
Toledo, Ohio. The shovel is the
68-C electric, caterpillar mounted,
is a Bucyrus 50-B electric.

4. More stripping and loading oper
Company's 320-B and 50-B Bucy
their coal property, DuQuoin, Ill

5. M. A. Hanna & Company's Bucy
Nashwauk, Minnesota. This ma
boom and a 5-cubic-yard bucket.

6. The International Harvester Co
30-B electric shovel in the Wa
Nashwauk, Minnesota.

7. M. A. Hanna & Company's new
shovel at work in their mines at

8. The Cranberry Creek Coal Co
electric at Hazleton, Pennsylvania.

9. An Australian installation. A
loading rock in the quarry of the
pany in New South Wales.

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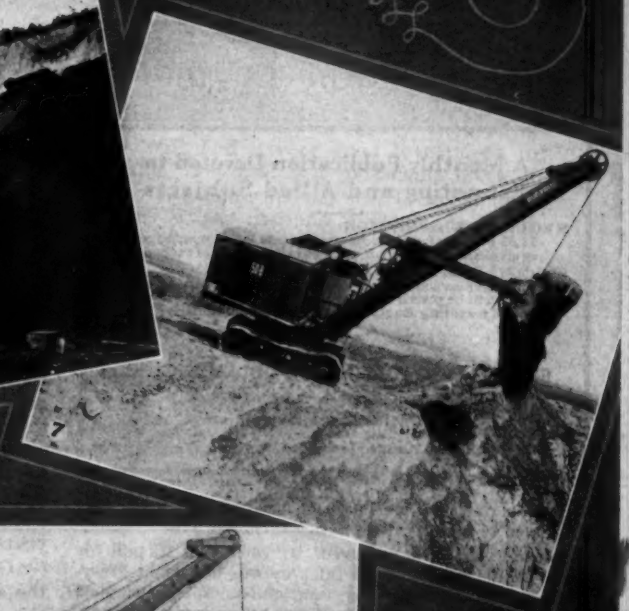

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The Excavating Engineer

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Those that consider preparedness and Defense Day a menace to peace, please notice this:

Jack Dempsey is prepared. If you doubt it, pull his nose. As he went through thick crowds last night everybody knew him, everybody was *polite*. Nobody slapped him or insulted him, and he didn't hit or insult anybody. *He's prepared* and people let him alone. He lets them alone unless they get in the ring with him.

As it is with individuals, so with nations. When they are prepared they have peace.

The above appeared in the editorial columns of *The Milwaukee Sentinel* on the day after the erstwhile "Wild Bull of the Pampas" had his little set-to with our dusky friend Mr. Wills.

We believe in being prepared.

We believe in a periodical rehearsal of just what we, as individuals, and as groups of individuals, should do in the event that this nation is ever obliged to take up arms in its defense.

Common sense dictates it, self-preservation and self-protection demand it.

We believe that every far-sighted contractor keeps on hand such renewals and supplies as are most likely to be required in case his equipment breaks down at a critical point in the execution of his contract.

We believe that every well-organized mine and quarry should be prepared beforehand to meet a sudden emergency.

Being prepared is not rattling the sabre any more than a fire drill in a school is a militaristic maneuver.

Our Center-Page Spread

The center-page spread in this issue brings forcibly to one's mind the fact that electricity has come to be no uncommon means of operation for the modern shovel and dragline. The electric excavating machine of today has been developed to a point where an operator can purchase such a machine, with the assurance that it can do the work of a steam machine with equal dependability and efficiency, and often with large saving in operating cost.

The application of electricity to an excavating machine is nothing new. As a matter of fact it was just 30 years ago when the first successful electric excavating machine was installed. This was a placer dredge used for the recovery of gold near Bannock, Montana. For 20 years thereafter, there was no strong demand behind the development of electricity as a power unit for an excavating machine. Coal was generally plentiful and the cost had not risen sufficiently to make this influence felt as it has been felt within recent years.

Generally speaking, local conditions, such as the availability of power at reasonable rates and the character of the fuel and water obtainable, will determine at the start whether or not it is advisable to consider the installation of electrically operated excavating machinery in preference to steam-driven machines.

The remarkable growth in the development of electrical power within the past decade through hydro-electric and other power plants, long-distance, high-voltage transmission lines and local central stations has made cheap power available to almost a universal extent.

The important question, therefore, that the prospective purchaser must determine is the advantage and economy to be derived, if electric power be used in place of steam in his particular operation.

It is well known that the steam shovel is almost perfectly adapted to the peculiar demands of excavation. For example, it responds well to sharp accelerations and retardations and automatically takes care of overloads when the dipper is stalled, since the boiler pressure effectively prevents the pull from exceeding the safe mechanical stresses in the machine. It is easy to operate, it is safe and sure and its principles are understood by every mechanic.

These advantages, however, which have so long been considered as characteristic only of the steam machine, are now equally characteristic of the modern electric shovel. The frequency with which electric shovels and draglines are being installed throughout the country today is in itself a proof of this fact.

· FIELD NOTES ·

Correct Method of Setting a Ball Joint in a Steam Line

It has many times been a subject for argument among shovel runners as to which is the correct way to set a ball joint in a steam line. There is but one correct way.

The ball joint consists of the male and the female parts, or in other words, the ball and the socket.

On either end is a nipple connecting the ends of the joint to the steam line. The correct action of the ball joint depends upon there being deflected a sufficient proportion of the oil, which is carried in the steam, for its lubrication.

Let us suppose the joint is set in such a manner that the ball is at the top and the socket at the bottom. Let us see what the action of the steam must be with such an arrangement. There is nothing here to deflect the steam and thus catch the oil. It all passes straight through the steam line to the engine. The joint thus receiving no lubrication will soon go dry, will stick and the result will soon be shown in the working loose of the nipples that connect the joint to the steam line.

On the other hand, suppose the socket is at the top and the ball at the bottom. The steam passing through the pipe at the socket is deflected on the ball, a sufficient amount of oil being deposited on the face of the ball to lubricate the joint.

After thinking this over, there should be no further argument.

Digging Out Boulders

When a boulder is encountered in earth, it is a temptation to "let 'er have it," and try to rip it out without digging around it first. The sudden strains of this kind of digging are tremendous. It is far better to dig the loose material from around the boulder, and then go to it. It will be found that no time will be lost in so doing.

How to Close a Cotter Pin

It's a safe bet that many a shovel operator has splattered much profanity over the difficulty in fitting a ⅜-inch or ½-inch cotter pin which has become spread, in its hole.

Here is a kink a pitman once taught an experienced shovel operator: For some time the operator had been struggling to pinch the ends together so as to make it slip in. He was in an awkward position, his temper was slipping in gusts. "Let me show you" said the pitman. He took the cotter pin, slipped his knife between the shanks about an inch from the end and tapped the end with a hammer. The trick was done.

Handy Extras Around a Contract Job

There are two pieces of equipment that every contractor using medium or heavy excavating machinery will find a very good investment to have on hand. The first is a good chain block of from one to two tons capacity which can be used in numerous ways. Around a steam shovel it has many applications in the reeving of cable or the picking up of heavy parts when making repairs. It can also be used in connection with the rolling stock for guiding cars into place, when dump cars are off the track, in straightening out a kink in the track between the trucks of a shovel and in many other cases.

The other piece of equipment consists of at least one powerful jack, the size depending somewhat on the maximum weight of the machine on which it may have to be used. The experience of many erecting engineers in putting up different classes of machinery under every kind of condition has shown that a good easy running ratchet screw jack is better for this class of work than the hydraulic jack, as there is less to get out of order and it is much more likely to operate properly when suddenly needed. Where railroad type shovels are used, one jack of 25 to 50-tons capacity, depending on the size of shovel, will often help out in many ways. In the case of big draglines or coal-stripping shovels, two jacks of this size or perhaps one of 75-tons capacity will often save their price during one or two calls for their use. Two jacks are particularly serviceable where the machine has to be erected a number of times.

Examples of the usefulness of both the jack and the chain block are innumerable. In taking a shaft out of a gear, for instance, the jack may be used for pushing and the block for pulling. On coal-stripping shovels it sometimes happens that a rail will break under one of the trucks; a 75-ton jack will save much time and money, as it is sufficiently powerful to lift up the corner of the truck and permit the replacing of the rail.

For general contract use, a jack without a self-lowering feature is usually fast enough and is recommended because of its lower cost.

Watch Your Pop

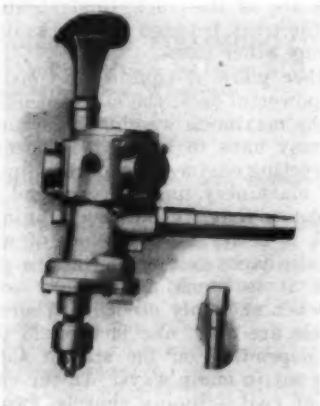
Judging from appearances few contractors realize the tremendous waste involved in allowing the safety valve to pop for any length of time. It has been demonstrated that each minute that a pop valve is open more steam is wasted than a shovel can use in the same length of time, or, in other words, as much heat as is contained in nearly a scoopful of coal.

DEVICES YOU OUGHT TO KNOW ABOUT

New Size "D" Pneumatic Drill

A new size lightweight non-reversible pneumatic drill has been brought out by the Ingersoll-Rand Company, No. 11 Broadway, New York. This new drill is known as Size D and is suitable for light drilling up to $\frac{9}{16}$-inch diameter holes, and reaming up to $\frac{5}{8}$-inch diameter.

This is a light-weight drill which may be fitted with either breast plate, feed screw or grip handle and so made adaptable for a wide variety of work. The construction of this machine is



Ingersoll-Rand New Size "D" Pneumatic Drill

very similar to that of the No. 6 and 600 Drills which this company brought out some two years ago and which were powered for drilling up to $\frac{3}{8}$-inch diameter. These drills proved so successful that this new size D Drill of larger bore and stroke was developed.

The features of this type of machine are briefly — light-weight aluminum case, with steel bushings cast in all the bearing holes and the throttle hole; cast iron cylinders which are renewable and interchangeable, and special three-cylinder motor. The renewable cylinders are a valuable feature, as any cylinder after long service may easily be replaced and the motor made as good as new at slight cost.

The three-cylinder motor has the rotating parts all accurately balanced, eliminating vibration and reducing wear and tear on the machine. The drill is very economical in air consumption and cost of maintenance, is high powered, and, moreover, every part is readily accessible for inspection.

Announces Fordson Trailer

The photograph herewith illustrates the new 1½-yard Fordson Trailer recently introduced by Easton Car & Construction Company, Easton, Pennsylvania. This company has been in the business of manufacturing earth-hauling equipment for a great many years, and is well equipped to manufacture such a device as is shown below.

On the job where this particular photograph was taken, five of these trailers are in operation, the company having bought 13 in all. The work consists of stripping the over-burden for a quarry in New Village, New Jersey. The shovel doing the stripping is a ¾-yard machine and loads directly into the trailers which have a capacity of 1½ cubic yards or 40 cubic feet.

The length of haul from the shovel to the dump is between 700 and 800 feet. The work is carried on over a ten-hour shift but due to various delays, because of inadequate water supply to the shovel, the actual running time is about 8¾ hours.

It is expected that the daily output of the shovel is about 450 cubic yards or 90 yards for each trailer in a little less than 9 hours. The average consumption of gasoline for the Fordson is between 10 and 12 gallons a day.

Fordson Trailer Introduced by Easton Car & Construction Co.

These Easton outfits are now working in various parts of the country and are attracting a very favorable amount of attention. It is said that each of these units does the work of 4 two-horse wagons. The device has a great range of usefulness and for quarries, contractors, brick yards, industrial plants, etc., it offers an efficient and economical solution of the haulage problem.

New Development in Metal Cutting Torches

One of the greatest advances in the art of oxyacetylene cutting apparatus has been recently perfected by The Alexander Milburn Company, Baltimore, Maryland.

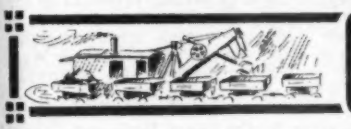
This is the perfection of a "SUPER TIP" for cutting, which, while embodying all the desirable features of the standard tip, has additional features which mark it as a signal improvement.

The distinctive features of this tip are a method of SUPER-MIXING the gases and pre-

heating the cutting oxygen as well as giving added velocity and penetration to the pre-heating and cutting jets. A further feature is that the tip is provided with a renewable seat at a fraction of the cost of a complete tip, rendering it unnecessary to re-machine or discard the used tips. This renewable seat facilitates the cleaning and maintenance of the tip. In the standard tip the seat could be refaced by taking a thin cut off of it in a high-speed lathe, but if the lathe is not available the seat cannot be as readily refaced.

The new tip retains all the advantages of the tip which has been standard on Milburn torches for a number of years, with the added advantages noted above. The mixture of the pre-heating gases takes place in multiple passages in the renewable seat. These gases then pass into an annular passage where they are given a swirling motion and an additional mixing. The gases are again separated and expanded into enlarged multiple passages leading to the orifices in the tip proper. Here the pre-heating flames are projected with an increased velocity inclined toward the high pressure oxygen jet, resulting in a speedier cut, a narrower kerf and a material saving in gases.

The "SUPER TIP" with renewable seat, is interchangeable with all sizes of Milburn cutting tips and will fit all that Company's torches manufactured since 1916.



SHOTS FROM THE · FIRING LINE ·

Central States News

The better weather conditions during the past few months have been taken advantage of in Illinois by the hard road contractors. During the week ending September 11th alone, nearly 55 miles of pavement were constructed. This mark has been exceeded in one week during the preceding season. Up to the middle of September construction work in Illinois has represented a total of 857.04 miles. This is 135 miles more than has been completed at the same time last year. Construction is now running four weeks ahead of the 1923 program according to official notices from the Highway Department.

Iowa and Missouri

BY W. S. PARROTTE

Paul Patton has his shovel on 37th and Broadway, Kansas City, digging a basement for a new hotel.

Tibbets & Tibbets are showing lots of speed on their Missouri road contracts. They are operating one of the largest plants in the state at Williamsburg, Missouri. Mr. J. W. Matthews has complete charge of their work.

F. L. Richards, who has a contract under Hamlin & Grauell, Muskogee, on their road job over Winding Stairs Mountain near Talihina, Oklahoma, is showing very good progress. Mr. Richards is operating a 20-B Bucyrus gas shovel on this work.

F. C. Fogle Construction Co. of Jefferson City are in full swing on their bridge contracts at both Marshall and Higginsville. They recently placed a Bucyrus 20-B on their Higginsville job.

Ed Luick Construction Co. have their shovel grading a lot at Chestnut and Grand in St. Louis.

Fruin-Colnon & Lane started work on the new city market at St. Louis. They also have one of their machines digging a basement at Chestnut and 18th Streets for a new garage.

Michigan

Mr. L. A. Woodward is operating an Erie shovel for Roberts Bros., who have a subcontract under Peterson, Shirley & Gunther for nine miles of railroad work for the C. & H. Mining Company at Hybrel, Michigan.

Northwestern States Notes

BY A. B. HANCE, PORTLAND, OREGON

The Interstate Commerce Commission has authorized the Wenatchee Southern Railway Company to build a 112-mile line in Chelan, Kittatas and Benton Counties, Washington. The granting of the permit to build the line ends a five-year fight on the part of the Wenatchee Valley fruit growers and business men of Wenatchee for a greater outlet for fruit crops.

The contract for the construction of 13.92 miles of the Lost River Highway in Bingham County, Idaho, between Taber and the Butte County line, was awarded to William Devlin, at Mountain Home, for $19,479.37. The contract calls for grading of the highway only. Mr. Devlin's bid was about $400.00 under the bid of the Utah Construction Company. The completion of this road will stimulate tourist travel to the Sawtooth County and the Craters of the Moon as a direct connection with the Yellowstone Park Highway.

The contract for the construction of the by-pass to parallel Big Wood River for a distance of 10½ miles, and to effect a saving of 46,000 acre feet per season for lands on the Big Wood Canal Company project, was let at Shoshone, Idaho, recently to the Morrison-Knudsen Company of Boise, Idaho, for $109,841.20. Three firms bid on the job, the unsuccessful bidders being William Devlin of Mountain Home, whose figures were $122,900.40, and the Gleim-Schafer Company of Pocatello, Idaho, whose price was $121,404.40.

Work on the Nation Cut-off of the Southern Pacific System is progressing rapidly. Paul J. Tyler, general contractor, has the subcontract for four large cuts, about 425,000 yards. The first was finished August 14th with a Bucyrus 70-C, which has moved to the second cut. The new Bucyrus 50-B is working in the third cut. Work on the larger concrete arch under the 74-foot fill is going ahead rapidly. It will contain over 2,000 yards.

The Oregon State Highway Commission at its meeting recently outlined plans for improvement of three strategic links of the Roosevelt Coast Highway. While no actual work on the three stretches of roadway is to be done before 1925, a survey is to be started at once on the difficult five-mile link between the Pistol River and

Myers Creek. Government aid in this work is expected. Completion of the project, which will be advertised within two months, is expected to cost about $120,000.

Oklahoma

Friends of Roy Edwards will be interested to learn that he has accepted a position with the Bushyhead Coal Company at Chelsea, Oklahoma, for operating a new Bucyrus 50-B.

Pacific Coast News

BY P. H. BIRCKHEAD AND J. H. SACKETT, SAN FRANCISCO.

Permits have been granted to the Southern California Edison Co., 306 West 3rd Street, Los Angeles, by the California Division of Water Rights, for the appropriation and use for power purposes of waters in the San Joaquin watershed above the 1,000-foot altitude. The following development is proposed: 15 Reservoirs will be constructed; 17 Power Houses, to develop a total of about 1,450,000 h. p.; 1 tunnel 13 miles in length, 14 x 14 feet inside diameter; also other tunnels.

Bates & Borland, Oakland, California, have started work on a hydraulic fill dam for the East Bay Water Company of Oakland and have installed a new Bucyrus 20-B high-lift shovel on the work.

OIL ENGINE DRIVE FOR DRAGLINES AND DITCHING DREDGES

RANDOLPH-PERKINS COMPANY
Geo. B. Massey, Vice President
1216 First National Bank Bldg.
CHICAGO

A bond election will be held on November 4th by the East Bay Municipal Utility District, Oakland, to vote on issuing bonds in a sufficient amount to finance the construction of a new water supply system for the East Bay Cities. Chief Engineer Arthur Powell Davis will confer next Thursday at Offices of the District at 505 17th Street, Oakland, with Consulting Engineers Geo. W. Goethals, Wm. Mulholland, and others, to decide on the source of the proposed water supply, and to fix an amount to be voted upon by the District to construct the project. The following possible sources of water are under consideration: 1, The Sacramento River; 2, The Mokelumne River; 3, The Eel River; 4, The American River; 5, Purchase of water from the San Francisco Hetch-Hetchy System. It is estimated that construction work, if commenced during 1925, will take four years to complete, and an additional four years to prepare for the operation of the system.

City Attorney Leon Gray is preparing proceedings for the calling of a bond election to vote on issuing bonds in amount of $1,250,000 to finance outfall sewer construction. It is proposed to construct outfall sewers for West and East Oakland, including Melrose and Fruitvale. Date for the election has not yet been set.

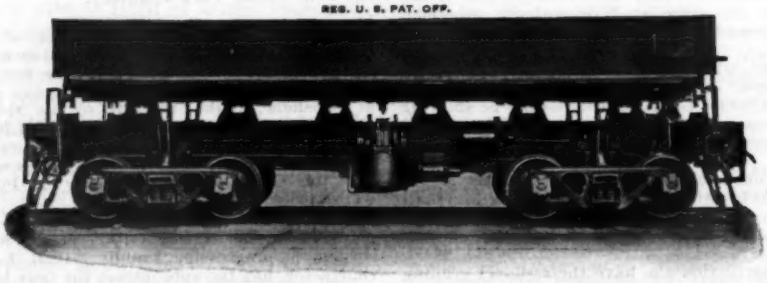
Plans are being made by the Coast Rock and Gravel Co., 500 Call Building, San Francisco, California, for the construction of a crushed rock and gravel plant at Roche, Tulare County. Plant will cost approximately $250,000, and will have a crusher with a capacity of 500 tons per hour.

Philadelphia and Vicinity

BY J. A. MURRAY

James McGraw Co. of Philadelphia still have about a year's work for their two Bucyrus 70-C's at Port Clinton, Pennsylvania, on the Philadelphia & Reading Railroad.

TRADE THE SEAL OF SATISFACTION K&J MARK
REG. U. S. PAT. OFF.



AIR DUMP CARS SIDE DUMP CARS

THE CASE CRANE & ENGINEERING CO.
Kilbourne & Jacobs Division
COLUMBUS, OHIO

Messrs. Wedow & Myers, Inc., Philadelphia, Pa., are making good progress on their part of the Bulls Gap-Leadvale Cut-off at White Pine, Tennessee. Mr. J. B. Wedow is in charge of the work and Mr. W. C. Parker is handling the levers of their Bucyrus 60-C, assisted by Albert Leslie, craneman, and J. B. Dickey, fireman. They have about a year's work to complete.

John A. Kelly Co., Philadelphia, have their Bucyrus 70-C at New Smyrna, Florida, on their contract for the Seaboard Air Line and are making good progress. Mr. John R. Morris is handling the job.

M. B. Markland Company, Atlantic City, New Jersey, have their new Bucyrus 20-B clamshell machine excavating and driving piles on the extension of Haddon Hall Hotel, Atlantic City. Mr. Dick Myers is handling the levers, assisted by Mr. Rochy Devinning.

Pittsburgh and Vicinity

BY F. B. SMITH

Ohio River-Edison Coal Company has received their Bucyrus 50-B for the Knoxville property. This shovel is now being erected and Mr. Morrison, who was originally with the Bucyrus Company, will operate this shovel.

McCrady Brothers of Braddock, who have a Bucyrus 30-B on the Penn State Highway, report that this shovel is giving very satisfactory service. The excavation on this job will be completed in the very near future.

Mr. Craig, President of the Westmoreland Limestone Company, reports that his Bucyrus 20-B Diesel is doing very satisfactory work and that the fuel costs are running less than $1.00 per day. The shovel has been working in rock, and under the most severe tests has proven more than satisfactory to Mr. Craig.

Charlie Flynn, Tice-Flynn Coal Company, reports that the Bucyrus 80-B is doing some wonderful performance on their operation. This plant is one of the best laid-out stripping plants in Southeastern Ohio. They now have about 25,000 tons of coal uncovered.

Southern States News

BY C. N. BALLENTINE AND W. W. WHORLEY, BIRMINGHAM

Rapid progress is being made at all the levee building camps on account of the recent favorable weather conditions.

J. W. Gwin of Birmingham, Alabama, journeyed to Tennessee during the last state highway letting and walked off with a nice road job in Bradley County.

Joe McAlister and Y. B. Turner are running double shift on the Government tower excavator at Whitehall, Arkansas. Hubert Hall and Ben Woods are decking. P. F. Ivey is cutting down the old levee and clearing right-of-way with a Class-9½ Bucyrus. L. J. Bidwell is master mechanic. Mr. George C. Little, United States foreman, is in charge of operations.

During the past two months the South has been hitting a pace for road building that will be difficult to follow. During the months of August and September the State of Tennessee let in the neighborhood of three and a half million cubic yards of work for close to 175 miles of road. This breaks all Southern records. During the year 1924 this state has so far let over nine and a half million cubic yards of work for over 445 miles of road as against 351 miles during 1923. J. G. Creveling, Jr., Highway Commissioner, during his 18 months of office, has let contracts for 803 miles of highway, as against 635 miles let during the previous 8 years.

Alabama also has been showing speed. During August a million and a half dollars worth of contracts were awarded. The greater proportion of this is on the Birmingham-Montgomery Highway in Chilton and Jefferson Counties. In the former county, J. R. and J. B. Miller of Baconton, Georgia, are at work on about 17 miles of concrete surfacing, while the Newell Contracting Company of Birmingham have about 7 miles of concrete work in Jefferson. J. J. McCarty has the contract for the grading.

The Western Construction Company of Little Rock have a 50,000-yard contract for grading on 16½ miles of work in Sumter County, and the Meyers Construction Company 9 miles in Escambia County, and Nixon & Phillips 6.3 miles in Choctaw County. This means that the South will be making the dirt fly during the forthcoming fall.

For Sale—BUCYRUS SHOVELS
Railroad Type—Standard Gauge

70 Ton 2½ and 3-Yard Dippers
95 Ton 4½ and 5-Yard Dippers

Self-propelling, railroad-type Bucyrus Steam Shovels in 95% condition. Carefully rebuilt and overhauled in our Joliet, Illinois, shops where they are now located for immediate release or your inspection.

Also a number of 12-yard all-steel Western and Oliver Dump Cars.

HARRIS BROTHERS CO.
35th and Iron Streets CHICAGO, ILL.

DIGGING CLAMSHELLS

Mud, muck and boulders all look alike to the Dreadnaught—and the sight of one of these husky clamshells working is convincing evidence that Blaw-Knox Buckets "have the guts."
If you have a digging job or a material handling job—

We Have the Bucket!

BLAW-KNOX COMPANY
633 Farmer's Bank Building
Pittsburgh, Pa.

BLAW-KNOX

St. Louis Items

BY A. B. KOENIG

A. S. Armstrong, District Manager of the Bates & Rogers Construction Co., Chicago, was here looking over the labor situation and things in general.

P. J. O'Brien of the Pacific Engineering & Contracting Co. wants a small shovel outfit and six teams on their dam work at Lewisburg, Tennessee.

The Union Construction Co. were low bidders on the Frisco job near Cape Girardeau, Missouri.

The Jennings Construction Co. have placed a team outfit on the Missouri Pacific Railroad in Southern Illinois. W. R. King is superintending this job.

Joseph Pickus, representing the Pickus Engineering & Construction Co. of Sioux City, is one of the new contractors we welcome to this part of the country. They started work on a new State Highway southwest of the city, September 10th.

E. B. Styles, President of the Styles Contracting Corporation, Chicago, reports their bridge work on the Illinois Central Railroad in Southern Illinois as progressing along nicely. Splendid weather down their way lately.

The Arenac Construction Co. of Standish, Michigan, report a steam shovel and clamshell outfit about idle. They want work for them, and can handle 1500 cubic yards a day.

Varney & Connors were awarded contract by the Illinois State Department of Public Works and Buildings for constructing two bridges near Piatt, Illinois.

"CARROLL QUALITY" PRODUCTS
The Best in Welded Chain

"CARROLL" Solid Weld Shovel Chain
Missing Links Cold Shuts
"DC" Dredge Quality Crane Chain
Commercial Chain
Proof Coil BB BBB
Immediate Shipments from Stock

THE CARROLL CHAIN CO.
Columbus, Ohio

H. C. Bothford has started pouring concrete on his highway work near Morris, Kansas. He has a team outfit at work on the same job.

J. L. Simmons is busy on State Highway in Sullivan County, Missouri.

J. W. McMurry Contracting Co. finished their concrete work on the Wabash Railroad near Worden, Illinois. They moved this outfit on to a Frisco job west of St. Louis. Tony Coyle is taking care of it.

The Industrial Track Construction Co. was awarded contract for building storage track yards for Union Car & Tank Co. at Philadelphia, Pennsylvania, consisting of 40 switches and passing tracks. There is also 90,000 yards of grading in this job. This firm has just completed laying track in the yards for the new waterworks plant near St. Louis. They are also completing their steam shovel contract on the Mobile & Ohio Railroad at Jackson, Tennessee.

McEachin & McEachin of Little Rock, Arkansas, were awarded contract for sewers in Eldorado, Arkansas. Their bid was $265,867.

Ralph A. Baum was awarded contract by the Illinois State Department of Public Works and Buildings for the paving of Section 22, State Bond Issue, Route 15, in Wayne County, Illinois. The section is 4½ miles in length.

C. M. Haynes was awarded contract for installing a $45,000 pumping unit in the Nutwood Drainage & Levee District in Jersey County, Illinois.

J. A. McCaughey reports a grader outfit idle at Petersburg, Illinois, that he can place on work immediately.

J. W. Brown is placing a fleet of trucks hauling sand and gravel on the Pickus Construction & Engineering Company State Highway job southwest of the city.

Canada

Montreal and Vicinity

BY J. M. WARD

There has been a considerable lull in construction activities in this district, but we are hoping for some improvement. Delegations have called upon the Government with a view to looking after the unemployed situation, and it has been recommended that as much as possible the public works, which may be on the program, should be started without delay and carried on during the winter wherever feasible.

The Harbour Commissioners of Montreal are being urged on all sides to hurry up the building of the new South Shore Bridge connecting Montreal with the South Shore. This will be quite a large undertaking and should employ quite a few hundred men.

The City of Montreal has proceeded with a very large program this past summer, and considerable paving, sidewalk and sewer work is under construction now.

Our genial friend Frank Munro was in to see us this week. He is doing some concrete work for the Delaware & Hudson at Lacolle, Quebec.

Another visitor was Mr. Chas. Laganiere of St. Croix, who does extensive road-building work.

Mr. Cyprien Gagnon of Alma, Quebec, has the contract for a couple of bridges and an embankment for the Quebec Development Company.

In order to hurry up the construction of the hydro development at Sheet Harbour, Nova Scotia, the Nova Scotia Power Commission has taken over about one mile of the work from the contractors and is going to do it themselves.

The Quebec Streams Commission is going to place about one million yards of sand to fill up some artificial lakes on the Kenogami Dam work. This work will be undertaken by Fraser-Brace & Company and Gorham & Peckham.

Our old friend, Jim Cavicchi, who has been working in Jamaica, has returned home. Jim prefers Canadian climate any time.

Price Bros. & Company, the large pulp and paper outfit, are constructing a new mill at St. Joseph d'Alma. They expect to take the power from the hydro development now under construction by the Quebec Development Company.

The twelve-mile branch line of the Canadian National Railways from Fresniere Junction has made rapid progress, and Mr. Hamilton Lindsay of the firm of McDonald & McLeod tells us that they are to finish this by the beginning of October. This will be ahead of schedule time.

The Canada Paper Company is preparing plans for an $800,000 dam development, and it is expected that tenders will be called for this in the Spring.

The Dominion Government, Department of Public Works, has completed borings for the proposed hydro development near Moncton, New Brunswick. This is a big job and is expected to run into about $17,000,000 before it is completed.

Plans are rapidly proceeding for the erection of a $1,000,000 coking plant at St. John, New Brunswick, and it is expected that before long this work will be proceeded with. The engineers are Day & Zimmerman of 611 Chestnut Street, Philadelphia.

Vancouver and Vicinity

BY J. C. MOON

Tenders for completion of the trans-provincial highway will be called within the next month according to an announcement made by the Minister of Public Works recently.

A contract for paving streets in the new Government residential district of Point Grey has been let to the A. B. Palmer Co., Ltd., of Vancouver; the amount is around $150,000.

With the end of the dry season in sight, and an improving lumber market, there are signs of a distinct improvement in lumbering conditions and most of the larger logging companies are making preparations to resume work on a large scale.

The Robin Hood Flour Mills are calling for tenders for a dock and warehouse to cost around $250,000, and this will be followed by the erection of a large mill.

The Northern Construction Company are busy with the pier foundations for the Second Narrows Bridge and are making good progress; this Company have also secured the contract for No. 1 Grain Jetty for the Harbor Commissioners.

The Sydney E. Junkins Co. have now got the new Canadian Pacific Railroad dock well under way, and are driving the concrete piles; the new floating pile driver, the largest in Canada, will be on the job in a short time, and is expected to speed up the operations considerably.

Winnipeg and Vicinity

BY F. X. AMOSS

Mr. Rowland Day, Oil Engineer of New York, was in Winnipeg recently en route to Ottawa, following a visit to the Alberta Tar Sands, and will consult with the Federal Government regarding plans to put these sands to profitable use. "There are other tar sand deposits in the world," Mr. Day said, "but none which compare in magnitude with those in Northern Alberta." He intimated that it might be necessary for the pioneering company to take over the Alberta & Great Waterways Railway as a preliminary to extending that line for another fifty miles. The greater part of this country is fairly level but one bridge would be necessary.

The Public Works Department of Alberta have more than 400 miles of new roads under construction at the present time. Several contracts have recently been awarded.

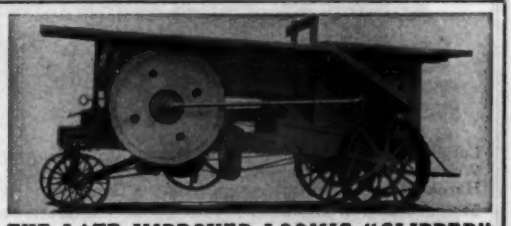
The New Bucyrus 160-ton wrecking crane recently purchased by the Canadian National Railways has for its first job the dismantling of the railroad bridge over Water Street, Winnipeg, preparatory to the street improvements being made at this point. Gus Tudholme is handling the levers.

Mr. E. H. McLeod, Consulting Engineer, and Mr. Duncan Campbell, General Superintendent of Construction, of the Canadian National Railways, have just returned from an inspection trip over the Pacific and Great Eastern Railway, and are making a report as to the advisability of this line being taken over by the National Road. Mr. McLeod, on his return trip to the East spent several days in Winnipeg renewing old acquaintances.

STROUD 5-YARD WAGON

Write or wire for specifications. Can furnish new or factory rebuilt.

The Little Red Wagon Mfg. Co.
Omaha, Nebraska



THE LATE IMPROVED LOOMIS "CLIPPER"

The most wonderfully efficient Blast Hole Drill produced! It is faultless, simple, durable, easily maintained, it commands your investigation. Days are not too long nor rock too hard for this famous Drill. There is a reason why it predominates.

THE LOOMIS MACHINE CO., (Established 1942) K Street, Tiffin, Ohio

TRADE NOTES

The Chicago Pneumatic Tool Company have entered into an agreement with the Schurs Oil Burner Company of Los Angeles, California, whereby they have become United States distributors for Schurs Oil Burners for brick, tile, sewer pipe and potteries industries. To insure prompt execution of orders the Chicago Pneumatic Tool Company carry a liberal stock of burners at their 17 branch service stations. Trial installations will be made for those contemplating installation of oil burners to prove the reliability and economy of said equipment.

Evidence of the growing use of motor trucks by municipal departments is offered in the announcement of the recent sale of 125 heavy-duty trucks to New York City by the General Motors Truck Company.

This is one of a substantial number of large municipal sales of GMC trucks during the current year.

The new fleet, which is one of the several large GMC fleets in operation in Greater New York, is to be used largely in garbage disposal and street cleaning work, practically all of the units being especially equipped for these purposes.

A severe shock, such as results in striking a curb, may spring the knuckle tie rod, thus throwing the front wheels out of proper alignment. This results in hard steering and excessive wearing of tires, either solid or pneumatics. In a case which recently came to my attention an operator completely ruined a pair of pneumatic tires on a fifty-mile drive after a slight accident.

The front wheels should not be lined up exactly parallel. Tie-rod adjustments should produce a "toe-in" of one-fourth to one-half of an inch in the front wheels (see manufacturer's instructions for exact dimensions and method of making adjustment).

Lubrication of all steering gear connections, including steering knuckles, at regular intervals, is necessary. The majority of "hard steering" complaints are due to a lack of lubrication.

"Lost motion" in the steering gear should be kept at a minimum but without causing binding at any point in the full travel of the wheel.

Announcement has been made of the appointment of Mr. V. H. Day and Mr. B. M. Price as regional vice-presidents of the General Motors Truck Company. By reason of their long years of service, both as executives and as members of the motor truck industry, both of the appointees are particularly well qualified for the important work that they are undertaking, officials of the company stated today.

Mr. Day will have headquarters at San Francisco and Mr. Price will be located in New York. They assumed their new duties September 15.

Mr. Charles H. Engelman, for many years wholesale manager of the New York territory of the General Motors Truck Company, has been appointed general sales manager with headquarters at the factory in Pontiac.

BIDS ASKED

Removal of overburden from clay deposit located near Mayfield, Kentucky, a total yardage of 200,000, and consisting of earth, sand and gravel, an average thickness of approximately 25 feet. Contract will be let in the very near future and work started soon thereafter. Illinois Central tracks right into our property; an attractive stripping proposition with labor situation easy.

Kentucky Construction & Improvement Co.

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"BUILT TO DO THE WORK"

Heavy-Duty Engine Manufacturers Since 1903

Specify Twin City Engines on Your Equipment

Largely used on equipment manufactured by such representative firms as Austin Machinery Corp., Baldwin Locomotive Works, Buckeye Traction Ditcher Co., Bucyrus Co., Northwest Engineering Co., The Parsons Co., Pawling & Harnischfeger Co., Pennsylvania Pump & Compressor Co., Russell Grader Mfg. Co., etc., etc.

Manufactured in sizes 35 to 140 horsepower. Literature and specifications gladly sent upon request.

TWIN CITY COMPANY, MINNEAPOLIS, MINN.

The Excavating Engineer

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ADDRESS ALL COMMUNICATIONS TO

THE EXCAVATING ENGINEER PUBLISHING COMPANY

BRADLEE VAN BRUNT, Manager and Editor

SOUTH MILWAUKEE WISCONSIN, U. S. A.

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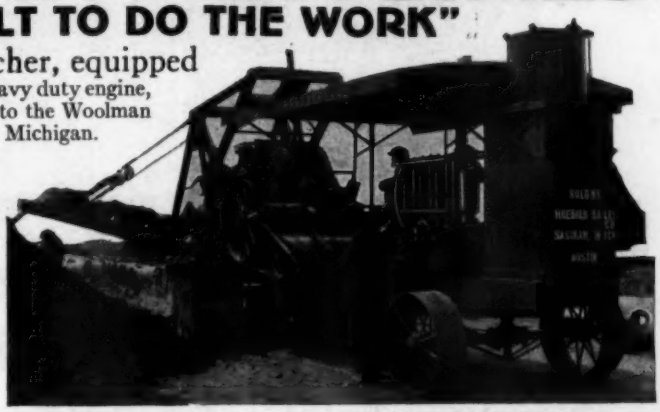
Austin Trencher Equipped with One of the Famous

TWIN CITY ENGINES

"BUILT TO DO THE WORK"

THIS Austin Trencher, equipped with a Twin City 7¼ x 9 heavy duty engine, is giving excellent service to the Woolman Construction Company, Saginaw, Michigan.



A few of the many other firms using Twin City Engines as a part of their equipment are: Baldwin Locomotive Works, Bucyrus Co., Buckeye Traction Ditcher Co., Northwest Engineering Co., The Parsons Co., Pawling & Harnischfeger Co., Pennsylvania Pump & Compressor Co., Russell Grader Mfg. Co., etc., etc.

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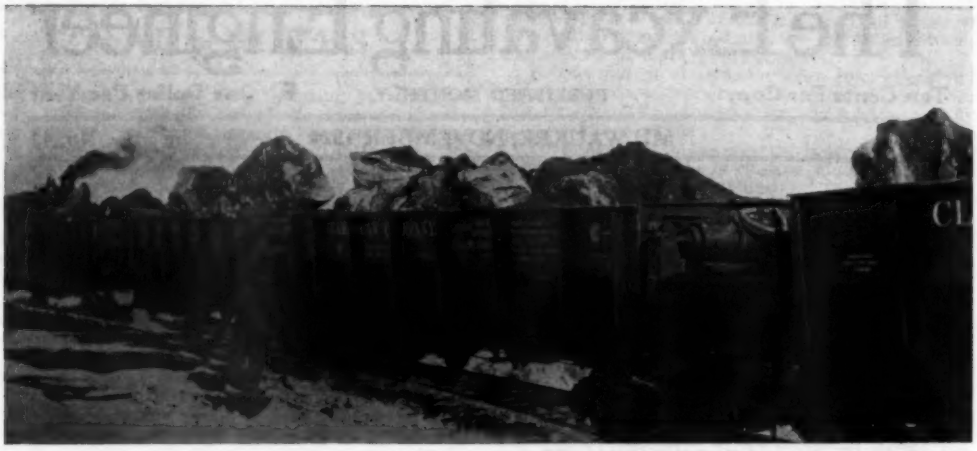
TWIN CITY COMPANY, MINNEAPOLIS, MINNESOTA

Heavy Duty Engine Manufacturers Since 1903



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IF you are the owner of large steam shovels, or other expensive loading equipment, stop and think a moment whether your dump cars possess the requisite features to secure maximum overall output. You may find, as others have, that the output of your loading machines is reduced, actually throttled, by car equipment not suited to requirements.

Many of our customers have increased the output of their loading equipment by installing air-operated Extension Side Dump Cars. The down turned door feature is an important contributing factor. As the body is dumped, the door turns down, out of the way — thus any character of load is dumped quickly and safely.

More than 80 companies are using Extension Side Dump Cars.

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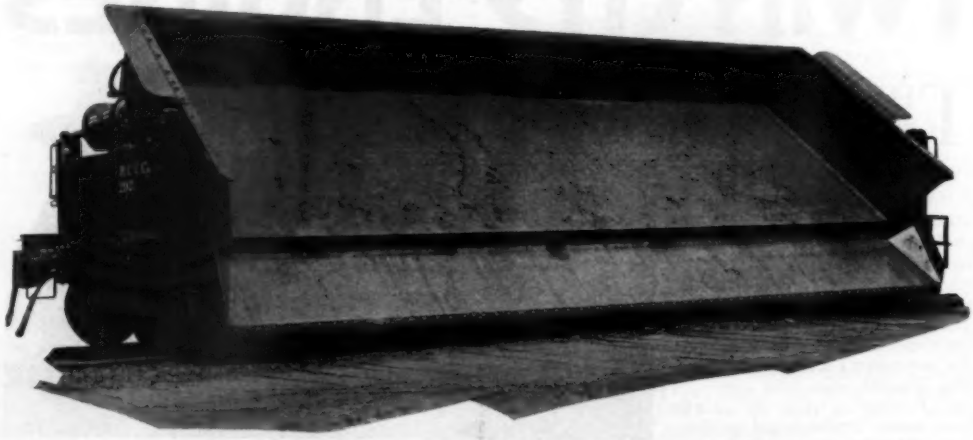

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It is a mighty expensive proposition to rebore a cylinder and fit new rings, not only because of the time and labor involved in the repair operation but also because of the serious losses which may be occasioned by slowing or shutting down operations. McCord Force Feed Lubricators, by doing an efficient, practical job of lubrication, greatly increase the service life of cylinder walls and pistons.

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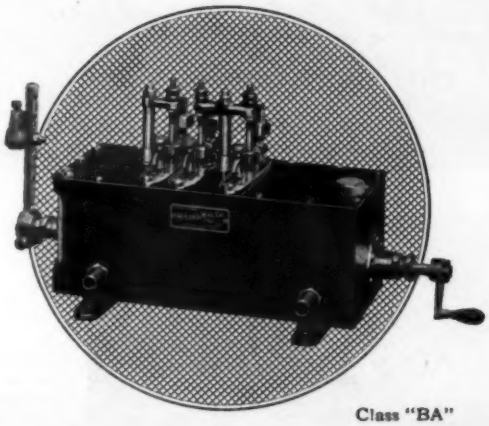

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Broderick Brothers, Villisco, Iowa, are at present engaged in a subcontract under the Walb Construction Company, involving 1,200,000 cubic yards of excavation, near Gary, Indiana. The upper view shows their new Bucyrus Class-24 Diesel-Electric Dragline digging the cut, and the view to the left, part of the completed section with Lake Michigan in the background.

Views of Broderick Brothers' Class-24 Diesel-Electric Dragline Excavator in Operation in the Famous Indiana Sand Dunes